IB888

Intel ® Atom
Poulsbo XL Chipset
3.5" Disk Size SBC

USER'S MANUAL

Version 1.1

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Table of Contents

Introduction 1

Product Description 1
Checklist 2
IB888 Specifications 3
Board Dimensions 4

Installations 5

Installing the Memory 6
Setting the Jumpers 7
Connectors on IB888 11

BIOS Setup 19

Drivers Installation 37

Intel Chipset Device Software 38
VGA Drivers Installation 39
Audio Drivers Installation 41
LAN Drivers Installation 42

Appendix 43

A. I/O Port Address Map 43
B. Interrupt Request Lines (IRQ) 44
C. Watchdog Timer Configuration 45

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Introduction

Product Description

The IB888 3.5" disk-size board incorporates the Mobile Intel® Poulsbo XL Chipset for Embedded Computing, consisting of the Intel® single-chip system controller hub (SCH), an optimized integrated graphics solution with a 533MHz and 400MHz front-side bus. Dimensions of the board are 102mm x 147mm.

The integrated powerful 3D graphics engine, based on Intel® Graphics Media Accelerator) architecture 500, operates at core speeds of up to 200 MHz. It features a low-power design, With DDR2 533/400MHz one SO-DIMM socket on board, the board supports up to 2GB of DDR2 system memory.

Intel® Graphics supports a unique intelligent memory management scheme called Dynamic Video Memory Technology (DVMT). DVMT handles diverse applications by providing the availability of system memory for general computer usage, while supplying additional graphics memory when a 3D-intensive application requests it. The Intel graphics architecture also takes advantage of the high-performance Intel processor. Intel graphics supports Dual Independent Display technology.

The main features of the board are:

- Supports Intel® Atom Z530 (1.6GHz), Z520 (1.33GHz), Z510 (1.1GHz)
- Supports 400/533MHz FSB
- One DDR2 SDRAM SO-DIMM, Max. 2GB memory
- Onboard One Realtek Gigabit LAN
- Intel® VGA for DVI-D / LVDS
- 1x IDE, 8x USB 2.0, 4x COM, Watchdog timer
- 1x Mini PCI-E Socket

Checklist

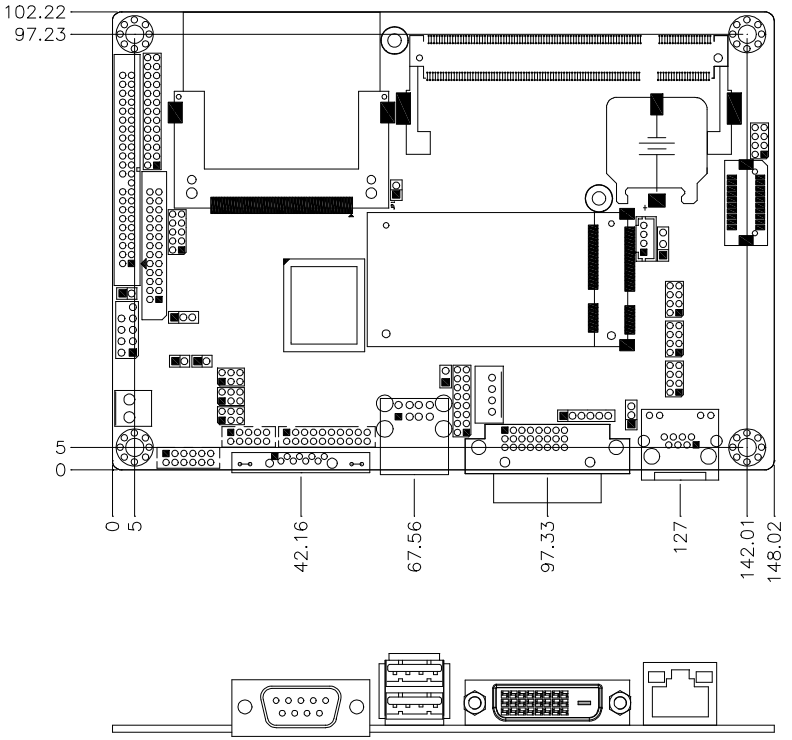
Your IB888 package should include the items listed below.

- The IB888 3.5" disk-size SBC
- This User's Manual
- 1 CD containing chipset drivers and flash memory utility
- Options:
    - Cable kit
    - Heatsink

IB888 Specifications

Form Factor	3.5" Disk Size SBC
CPU Type	Intel Atom (Silverthorne XL) CPUs 533 MHz, - Ultra Low Voltage - 512KB On-die L2 Cache - Hyper- Threading Technology support
System Speed	1.1GHz/1.33GHz / 1.6GHz
CPU FSB	400/533MHz
Cache	512K L2 cache
Green /APM	APM1.2
BIOS	Award BIOS: supports ACPI function
Chipset	Intel Poulsbo XL SCH Chipset, 1295-pin BGA, 37.5X37.5 mm
Memory	1 x 200-pin DDRII, 400/533-MT/s SO-DIMM, Max. 2GB
VGA	Chrontel CH7307C DVI-D through SDVO port
LAN	One PCI-E Gigabit LAN (Realtek RTL8111C)
USB	Poulsbo XL SCH built-in USB2. 0 host controller with 8 ports,
Audio	Poulsbo XL SCH built-in Audio controller ALC662 5.1-Channel (Line-in, Line-out & Microphone)
PATA-IDE	Poulsbo XL SCH built-in one channel Ultra DMA 33/66/100 for IDE (44-pin box-header x 1) & CF (TYPEII)
LPC I/O	Winbond 83627EHG: - COM1 (RS232), COM2 (RS232/422/485), - LPT1 - Hardware monitor (3 thermal inputs, 6 voltage monitor inputs) - KB/Mouse Connector
2nd LPC I/O	Fintek F81216DG COM3 & COM4 (RS232)
RTC/CMOS	Poulsbo XL SCH built-in with on board Lithium Battery
Edge Connector	DVI-D x1 for VGA DB9 x1 for COM1 RJ45 x1 for Gigabit LAN Dual USB stack connector x1 for USB1/2
Onboard Header / Connectors	DF13 Socket x 1 for LVDS 8 pins header x 3 for 6 USB ports 44-pin box header x1 for IDE DF11 12-pin header x1 for audio DF11 10-pin header x1 for COM2 DF11 20-pin header x1 for COM3, COM4 26-pin box header for SD/SDIO/MMC 26-pin header for Parallel port 10-pin header for KB/MS
Digital I/O	4 in / 4 out
Expansion Slots	Mini PCI-E Socket x1
Watchdog Timer	Yes (256 segments, 0, 1, 2…255. sec/min)
Power Connector	DC power jack x1 for +12V DC-in
Board Size	102 x 147mm

Board Dimensions



Installations

This section provides information on how to use the jumpers and connectors on the IB888 in order to set up a workable system. The topics covered are:

Installing the Memory 6
Setting the Jumpers 7
Connectors on IB888 11

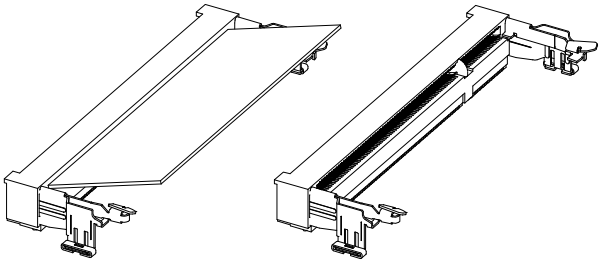
Installing the Memory

The IB888 board supports a DDR2 memory socket for a maximum total memory of 2GB in DDR2 533/400 memory type.

Installing and Removing Memory Modules

To install DDR2 modules, locate the memory socket on the board and perform the following steps:

1. Hold the DDR2 module so that the keys of the DDR2 module align with those on the memory slot.
2. Gently push the DDR2 module in an angle as shown in the picture below until the clips of the sockets lock to hold the DDR2 module in place when the DDR2 module touches the bottom of the socket.
3. To remove the DDR2 module, press the clips with both hands.

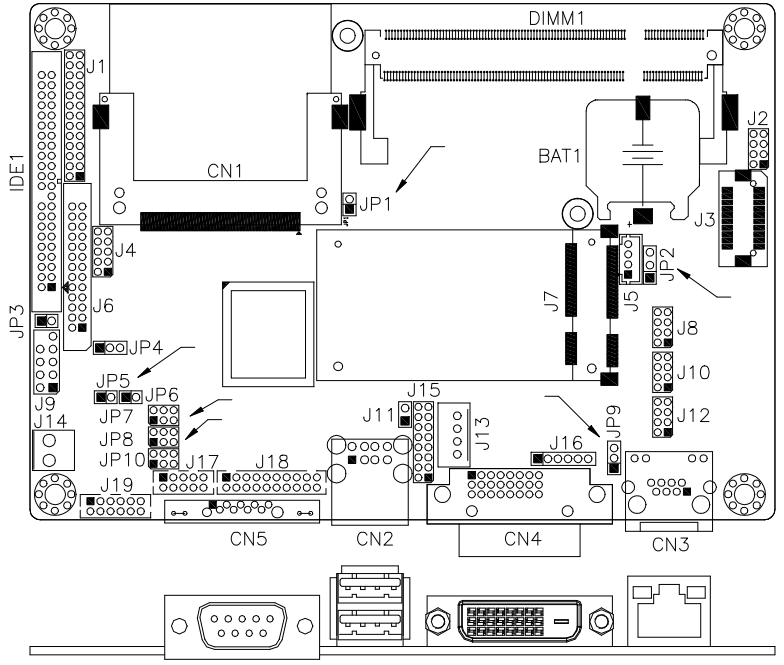


Setting the Jumpers

Jumpers are used on IB888 to select various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your needs. The following lists the connectors on IB888 and their respective functions.

Jumper Locations on IB888 8
JP1: Compact Flash Slave/Master Selection 9
JP2: LCD Panel Power Selection 9
JP4: AT/ATX Selection 9
JP5, JP6: SD/IO Power Selection 9
JP7, JP8, JP10: RS232/422/485 (COM2) Selection 10
JP9: Clear CMOS Setting 10

Jumper Locations on IB888



Jumpers on IB888 ..... Page
JP1: Compact Flash Slave/Master Selection 9
JP2: LCD Panel Power Selection 9
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JP5, JP6: SD/IO Power Selection 9
JP7, JP8, JP10: RS232/422/485 (COM2) Selection 10
JP9: Clear CMOS Setting 10

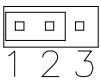
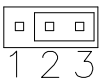
JP1: Compact Flash Slave/Master Selection

JP1	CF Setting
	Master
	Slave

JP2: LCD Panel Power Selection

JP2	LCD Panel Power
	3.3V
	5V

JP4: AT/ATX Selection

JP4	Setting	Function
	Pin 1-2 Short/Closed	ATX mode
	Pin 2-3 Short/Closed	AT mode

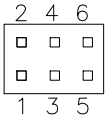
JP5, JP6: SD/IO Power Selection

JP5	SLOT2 Power
	Enable
	By MANUAL

JP6	SLOT1 Power
	Enable
	By MANUAL

JP7, JP8, JP10: RS232/422/485 (COM2) Selection

COM1, COM3, COM4 are fixed for RS-232 use only.
COM2 is selectable for RS232, RS-422 and RS-485.
The following table describes the jumper settings for COM2 selection.



COM2 Function	RS-232	RS-422	RS-485
Jumper Setting (pin closed)	JP7: 1-2 JP8: 3-5 & 4-6 JP10: 3-5 & 4-6	JP7: 3-4 JP8: 1-3 & 2-4 JP10: 1-3 & 2-4	JP7: 5-6 JP8: 1-3 & 2-4 JP10: 1-3 & 2-4

JP9: Clear CMOS Setting

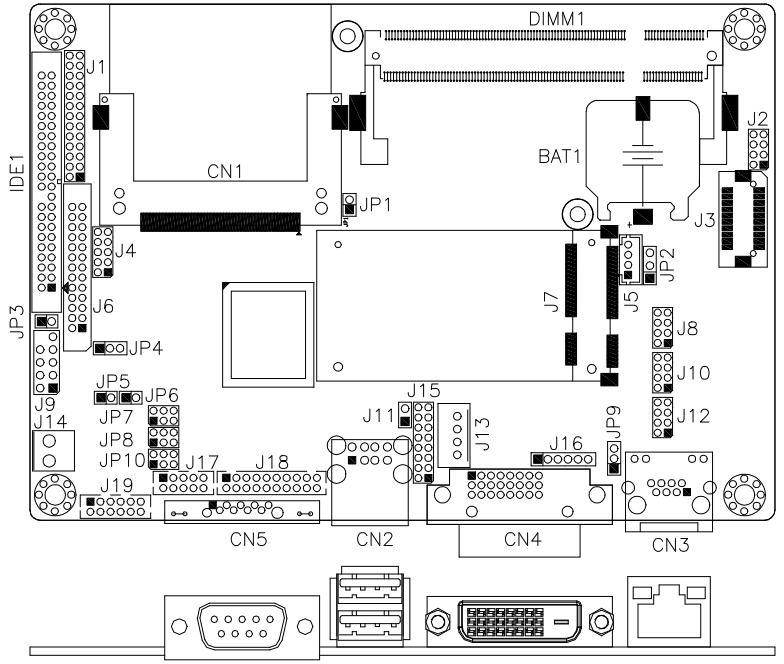
JP9	Setting
	Normal
	Clear CMOS

Note: After clearing CMOS, return the jumper to pin 1-2 (short).

Connectors on IB888

Connector Locations on IB888 12
CN1: Compact Flash Connector 13
CN2: USB 0/1 Connector 13
CN3: Gigabit LAN RJ45 Connector 13
CN4: DVI-D Connector 13
CN5, J17: COM1, COM2 Serial Ports Connector 13
IDE1: IDE Connector 14
J1: Parallel Port Connector 14
J2 (F_PANEL): System Function Connector 15
J3: LVDS Connectors (DF13 Connector) 16
J4: Digital I/O Connector (4 in, 4 out) 16
J5: LCD Backlight Connector 16
J6: SD/IO Connector 17
J8, J10, J12: USB2~USB7 Connectors 17
J9: PS/2 Keyboard / Mouse Connector 17
J13: HDD Power Connector 17
J11: Buzzer 18
J14: Board Input Power Connector 18
J15: LPC Connector (factory use only) 18
J16: CPLD Connector (factory use only) 18
J18: COM3, COM4 Serial Port (DF11 Connector) 18
J19: Audio Connector 18

Connector Locations on IB888



CN1: Compact Flash Connector

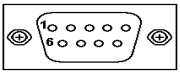
CN2: USB 0/1 Connector

CN3: Gigabit LAN RJ45 Connector

CN4: DVI-D Connector

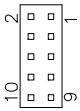
CN5, J17: COM1, COM2 Serial Ports Connector

CN5 (COM1) is a DB-9 connector, while J17 (COM2) is a pin-header connector.



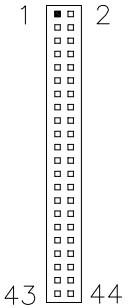
Signal Name	Pin #	Pin #	Signal Name
DCD, Data carrier detect	1	2	RXD, Receive data
TXD, Transmit data	3	4	DTR, Data terminal ready
GND, ground	5	6	DSR, Data set ready
RTS, Request to send	7	8	CTS, Clear to send
RI, Ring indicator	9	10	Not Used

J17: COM2 is jumper selectable for RS-232, RS-422 and RS-485.



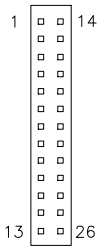
Pin #	Signal Name		
	RS-232	RS-422	RS-485
1	DCD	TX-	DATA-
2	RX	TX+	DATA+
3	TX	RX+	NC
4	DTR	RX-	NC
5	Ground	Ground	Ground
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC
10	NC	NC	NC

IDE1: IDE Connector



Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Protect pin
DRQ0	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK0	29	30	Ground
IRQ14	31	32	No connect
Address 1	33	34	Cable Detect
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground
+5V	41	42	+5V
Ground	43	44	NC

J1: Parallel Port Connector



Signal Name	Pin #	Pin #	Signal Name
Line printer strobe	1	14	AutoFeed
PD0, parallel data 0	2	15	Error
PD1, parallel data 1	3	16	Initialize
PD2, parallel data 2	4	17	Select
PD3, parallel data 3	5	18	Ground
PD4, parallel data 4	6	19	Ground
PD5, parallel data 5	7	20	Ground
PD6, parallel data 6	8	21	Ground
PD7, parallel data 7	9	22	Ground
ACK, acknowledge	10	23	Ground
Busy	11	24	Ground
Paper empty	12	25	Ground
Select	13	N/A	N/A

J2 (F_PANEL): System Function Connector

J2 provides connectors for system indicators that provide light indication of the computer activities and switches to change the computer status. J2 is an 8-pin header that provides interfaces for the following functions.

ATX Power ON Switch: Pins 1 and 2

This 2-pin connector is an "ATX Power Supply On/Off Switch" on the system that connects to the power switch on the case. When pressed, the power switch will force the system to power on. When pressed again, it will force the system to power off.

Power LED: Pins 3 and 4

Pin #	Signal Name
3	LED(+)
4	LED(-)

Hard Disk Drive LED Connector: Pins 5 and 6

This connector connects to the hard drive activity LED on control panel. This LED will flash when the HDD is being accessed.

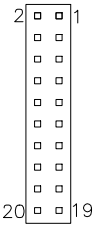
Pin #	Signal Name
5	LED(+)
6	LED(-)

Reset Switch: Pins 7 and 8

The reset switch allows the user to reset the system without turning the main power switch off and then on again. Orientation is not required when making a connection to this header.

J3: LVDS Connectors (DF13 Connector)

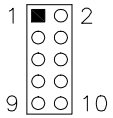
The LVDS connector supports single-channel 18-bit or 24-bit displays.



Signal Name	Pin #	Pin #	Signal Name
TX0-	2	1	TX0+
Ground	4	3	Ground
TX1-	6	5	TX1+
5V/3.3V	8	7	Ground
TX3-	10	9	TX3+
TX2-	12	11	TX2+
Ground	14	13	Ground
TXC-	16	15	TXC+
5V/3.3V	18	17	ENABKL
DDC_DATA	20	19	DDC_CLK

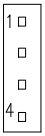
J4: Digital I/O Connector (4 in, 4 out)

This 10-pin digital I/O connector supports TTL levels and is used to control external devices requiring ON/OFF circuitry.



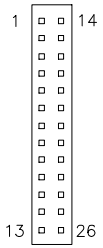
Signal Name	Pin #	Pin #	Signal Name
Ground	1	2	+5V
Out3	3	4	Out1
Out2	5	6	Out0
IN3	7	8	IN1
IN2	9	10	IN0

J5: LCD Backlight Connector



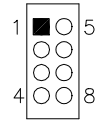
Pin #	Signal Name
1	+12V
2	Backlight Enable
3	ADJ
4	Ground

J6: SD/IO Connector



Signal Name	Pin #	Pin #	Signal Name
SLOT2-PWR(3.3V)	1	14	SLOT1-PWR(3.3V)
SLOT2-DATA0	2	15	SLOT1-DATA0
SLOT2-DATA1	3	16	SLOT1-DATA1
SLOT2-DATA2	4	17	SLOT1-DATA2
SLOT2-DATA3	5	18	SLOT1-DATA3
SLOT2-DATA4	6	19	SLOT1-CMD
SLOT2-DATA5	7	20	SLOT1-CLK
SLOT2-DATA6	8	21	SLOT1-CD#
SLOT2-DATA7	9	22	SLOT1-WP
SLOT2-CMD	10	23	N/A
SLOT2-CLK	11	24	N/A
SLOT2-CD#	12	25	Ground
SLOT2-WP	13	26	Ground

J8, J10, J12: USB2~USB7 Connectors

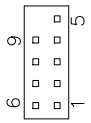


Signal Name	Pin	Pin	Signal Name
VCC	1	5	Ground
USB2-	2	6	USB3+
USB2+	3	7	USB3-
Ground	4	8	VCC

Note: J12 (USB6/7) is compatible with USB2.0 device only.

J9: PS/2 Keyboard / Mouse Connector

J9 is a 10-pin header connector, has functions for both keyboard and mouse. The following table shows the pin assignments of this connector.



Signal Name	Pin #	Pin #	Signal Name
Protect pin	10	5	N.C.
KB clock	9	4	Mouse clock
KB data	8	3	Mouse data
VCC	7	2	VCC
Ground	6	1	Ground

J13: HDD Power Connector

Pin #	Signal Name
1	+5V
2	Ground
3	Ground
4	+12V

J11: Buzzer

Pin #	Signal Name
1	+5V
2	Beep

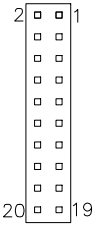
J14: Board Input Power Connector

Pin #	Signal Name
1	+12V
2	GND

J15: LPC Connector (factory use only)

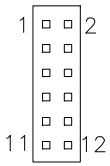
J16: CPLD Connector (factory use only)

J18: COM3, COM4 Serial Port (DF11 Connector)



Signal Name	Pin #	Pin #	Signal Name
DSR3	2	1	DCD3
RTS3	4	3	RXD3
CTS3	6	5	TXD3
RI3	8	7	DTR3
NC	10	9	Ground
DSR4	12	11	DCD4
RTS4	14	13	RXD4
CTS4	16	15	TXD4
RI4	18	17	DTR4
NC	20	19	Ground

J19: Audio Connector



Signal Name	Pin #	Pin #	Signal Name
LINE-OUT_L	1	2	LINE-OUT_R
JD-OUT	3	4	Ground
LINE-IN_L	5	6	LINE-IN R
JD-IN	7	8	Ground
Mic-In L	9	10	Mic-In R
JD-Mic	11	12	Ground

BIOS Setup

This chapter describes the different settings available in the Award BIOS that comes with the board. The topics covered in this chapter are as follows:

BIOS Introduction 20
BIOS Setup 20
Standard CMOS Features 22
Advanced BIOS Features 25
Advanced Chipset Features 28
Integrated Peripherals 289
Power Management Setup 32
PNP/PCI Configurations 34
PC Health Status 35
Load Fail-Safe Defaults 36
Load Optimized Defaults 36
Set Supervisor/User Password 36
Save & Exit Setup 36
Exit Without Saving 36

BIOS Introduction

The Award BIOS (Basic Input/Output System) installed in your computer system's ROM supports Intel processors. The BIOS provides critical low-level support for a standard device such as disk drives, serial ports and parallel ports. It also adds virus and password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

BIOS Setup

The Award BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the Award BIOS is immediately activated. Pressing the <Del> key immediately allows you to enter the Setup utility. If you are a little bit late pressing the <Del> key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again. The following message will appear on the screen:

```
Press  <DEL>  to  Enter  Setup
```

In general, you press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.

When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

Phoenix - AwardBIOS CMOS Setup Utility

Standard CMOS Features Advanced BIOS Features Advanced Chipset Features Integrated Peripherals Power Management Setup PnP/PCI Configurations PC Health Status	Load Fail-Safe Defaults Load Optimized Defaults Set Supervisor Password Set User Password Save & Exit Setup Exit Without Saving
ESC : Quit F10 : Save & Exit Setup	↑ ↓ → ← : Select Item
Time, Date, Hard Disk Type…	

The section below the setup items of the Main Menu displays the control keys for this menu. At the bottom of the Main Menu just below the control keys section, there is another section, which displays information on the currently highlighted item in the list.

***Note**: If the system cannot boot after making and saving system changes with Setup, the Award BIOS supports an override to the CMOS settings that resets your system to its default.*

***Warning:** It is strongly recommended that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your system manufacturer to provide the absolute maximum performance and reliability. Changing the defaults could cause the system to become unstable and crash in some cases.*

Standard CMOS Features

"Standard CMOS Features" choice allows you to record some basic hardware configurations in your computer system and set the system clock and error handling. If the board is already installed in a working system, you will not need to select this option. You will need to run the Standard CMOS option, however, if you change your system hardware configurations, the onboard battery fails, or the configuration stored in the CMOS memory was lost or damaged.

Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features

Date (mm:dd:yy)	Tue, Mar 3 2009	Item Help
Time (hh:mm:ss)	12 : 00 : 00	Menu Level >
IDE Channel 0 Master	None	Change the day, month,
IDE Channel 0 Slave	None	Year and century
Video	EGA/VGA	
Halt On	All, But Keyboard	
Base Memory	640K	
Extended Memory	129024K	
Total Memory	130048K	

At the bottom of the menu are the control keys for use on this menu. If you need any help in each item field, you can press the <F1> key. It will display the relevant information to help you. The memory display at the lower right-hand side of the menu is read-only. It will adjust automatically according to the memory changed. The following describes each item of this menu.

Date

The date format is:

Day : **Sun to Sat**
Month : **1 to 12**
Date : **1 to 31**
Year : **1999 to 2099**

To set the date, highlight the "Date" field and use the PageUp/ PageDown or +/- keys to set the current time.

Time

The time format is: **Hour : 00 to 23**
Minute : 00 to 59
Second : 00 to 59

To set the time, highlight the "Time" field and use the <PgUp>/ <PgDn> or +/- keys to set the current time.

IDE Channel Master/Slave

The onboard PCI IDE connector provides Primary and Secondary channels for connecting up to two IDE hard disks or other IDE devices.

Press <Enter> to configure the hard disk. The selections include Auto, Manual, and None. Select 'Manual' to define the drive information manually. You will be asked to enter the following items.

Capacity :	Capacity/size of the hard disk drive
Cylinder :	Number of cylinders
Head :	Number of read/write heads
Precomp :	Write precompensation
Landing Zone :	Landing zone
Sector :	Number of sectors

The Access Mode selections are as follows:

CHS	(HD < 528MB)
LBA	(HD > 528MB and supports Logical Block Addressing)
Large	(for MS-DOS only)
Auto	

Video

This field selects the type of video display card installed in your system. You can choose the following video display cards:

EGA/VGA	For EGA, VGA, SEGA, SVGA or PGA monitor adapters. (default)
CGA 40	Power up in 40 column mode.
CGA 80	Power up in 80 column mode.
MONO	For Hercules or MDA adapters.

Halt On

This field determines whether or not the system will halt if an error is detected during power up.

No errors	The system boot will not be halted for any error that may be detected.
All errors	Whenever the BIOS detects a non-fatal error, the system will stop and you will be prompted.
All, But Keyboard	The system boot will not be halted for a keyboard error; it will stop for all other errors
All, But Diskette	The system boot will not be halted for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not be halted for a keyboard or disk error; it will stop for all others.

Advanced BIOS Features

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features

CPU Feature	Press Enter	ITEM HELP
Hard Disk Boot Priority	Press Enter	
Virus Warning	Disabled	Menu Level >
CPU L1 & L2 Cache	Enabled	
CPU L3 Cache	Enabled	
Hyper-Threading Technology	Enabled	
Quick Power On Self Test	Enabled	
First Boot Device	USB-FDD	
Second Boot Device	Hard Disk	
Third Boot Device	CDROM	
Boot Other Device	Enabled	
Boot Up NumLock Status	On	
Typematic Rate Setting	Disabled	
Typematic Rate (Chars/Sec)	6	
Typematic Delay (Msec)	250	
Security Option	Setup	
APIC Mode	Enabled	
MPS Version Control for OS	1.4	
OS Select For DRAM>64MB	Non-OS2	
Small Logo (EPA) Show	Disabled	

CPU Feature

Press Enter to configure the settings relevant to CPU Feature.

Hard Disk Boot Priority

With the field, there is the option to choose, aside from the hard disks connected, "Bootable add-in Cards" which refers to other external devices.

Virus Warning

If this option is enabled, an alarm message will be displayed when trying to write on the boot sector or on the partition table on the disk.

CPU L1 / L2 / L3 Cache

Cache memory is additional memory that is much faster than conventional DRAM (system memory). CPUs from 486-type on up contain internal cache memory, and most, but not all, modern PCs have additional (external) cache memory. When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for even faster access by the CPU. These items allow you to enable (speed up memory access) or disable the cache function. By default, these items are enabled.

Hyper-Threading Technology
By default, this function is enabled.

Quick Power On Self Test
When enabled, this field speeds up the Power On Self Test (POST) after the system is turned on. If it is set to *Enabled*, BIOS will skip some items.

First/Second/Third Boot Device
These fields determine the drive that the system searches first for an operating system. The options available include *LS120*, *Hard Disk*, *CDROM*, *ZIP100*, *USB-FDD*, *USB-ZIP*, *USB-CDROM*, *Legacy LAN*, *Realtek Boot Ag* and *Disabled*.

Boot Other Device
These fields allow the system to search for an OS from other devices other than the ones selected in the First/Second/Third Boot Device.

Boot Up NumLock Status
This allows you to activate the NumLock function after you power up the system.

Typematic Rate Setting
When disabled, continually holding down a key on your keyboard will generate only one instance. When enabled, you can set the two typematic controls listed next. By default, this field is set to ***Disabled.***

Typematic Rate (Chars/Sec)
When the typematic rate is enabled, the system registers repeated keystrokes speeds. Settings are from 6 to 30 characters per second.

Typematic Delay (Msec)

When the typematic rate is enabled, this item allows you to set the time interval for displaying the first and second characters. By default, this item is set to ***250msec.***

Security Option

This field allows you to limit access to the System and Setup. The default value is ***Setup***. When you select *System,* the system prompts for the User Password every time you boot up. When you select *Setup,* the system always boots up and prompts for the Supervisor Password only when the Setup utility is called up.

APIC Mode

APIC stands for Advanced Programmable Interrupt Controller. The default setting is ***Enabled***.

MPS Version Control for OS

This option is specifies the MPS (Multiprocessor Specification) version for your operating system. MPS version 1.4 added extended configuration tables to improve support for multiple PCI bus configurations and improve future expandability. The default setting is ***1.4***.

OS Select for DRAM > 64MB

This option allows the system to access greater than 64MB of DRAM memory when used with OS/2 that depends on certain BIOS calls to access memory. The default setting is ***Non-OS/2***.

Small Logo (EPA) Show

The EPA logo appears at the right side of the monitor screen when the system is boot up. The default setting is ***Disabled***.

Advanced Chipset Features

This Setup menu controls the configuration of the chipset.

Phoenix - AwardBIOS CMOS Setup Utility
Advanced Chipset Features

DRAM Timing Selectable	By SPD	ITEM HELP
SLP_S4# Assertion Width	4 to 5 Sec	Menu Level >
System BIOS Cacheable	Enabled	
Video BIOS Cacheable	Disabled	
** VGA Setting **		
On-Chip Frame Buffer Size	8MB	
Boot Type	DVI	
LCD Panel Type	1024x768 generic	
Panel Scaling	AUTO	
BIA Control	VBIOS Default	

DRAM Timing Selectable

This option refers to the method by which the DRAM timing is selected. The default is ***By SPD***.

SLP_S4# Assertion Width

The default setting is ***4 to 5 Sec***.

System BIOS Cacheable

The setting of *Enabled* allows caching of the system BIOS ROM at F000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

Video BIOS Cacheable

The Setting *Enabled* allows caching of the video BIOS ROM at C0000h-F7FFFh, resulting in better video performance. However, if any program writes to this memory area, a system error may result. By default, this field is disabled.

VGA Setting

The fields under the VGA Setting and their default settings are:

On-Chip Frame Buffer Size: 8MB
Boot Type: DVI
LCD Panel Type: 1024x768 generic
Panel Scaling: Auto
BIA Control: VBIOS Default

Integrated Peripherals

This section sets configurations for your hard disk and other integrated peripherals. The first screen shows three main items for user to select. Once an item selected, a submenu appears. Details follow.

Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals

OnChip IDE Device	Press Enter	ITEM HELP
Onboard Device	Press Enter	Menu Level >
Super IO Device	Press Enter	
Second IO Device	Press Enter	
PCI Express Root Function	Press Enter	
USB Device Setting	Press Enter	
Onboard Lan Boot ROM	Disabled	

Phoenix - AwardBIOS CMOS Setup Utility
OnChip IDE Device

IDE HDD Block Mode	Enabled	ITEM HELP
IDE Primary Master PIO	Auto	Menu Level >
IDE Primary Slave PIO	Auto	
IDE Primary Master UDMA	Auto	
IDE Primary Slave UDMA	Auto	

Phoenix - AwardBIOS CMOS Setup Utility
Onboard Device

Intel HD Audio Controller	Auto	ITEM HELP
USB Client Controller	Disabled	
SDIO/MMC Controller	Enabled	

Phoenix - AwardBIOS CMOS Setup Utility
Super IO Device

Onboard Serial Port 1	3F8/IRQ4	ITEM HELP
Onboard Serial Port 2	2F8/IRQ3	Menu Level >
Onboard Parallel Port	378/IRQ7	
Parallel Port Mode	SPP	
EPP Mode Select	EPP1.7	
ECP Mode Use DMA	3	

Phoenix - AwardBIOS CMOS Setup Utility
Second Super IO Device

Onboard Serial Port 3	3E8h	ITEM HELP
Serial Port 3 Use IRQ	IRQ10	Menu Level >
Onboard Serial Port 4	2E8h	
Serial Port 4 Use IRQ	IRQ5	

Phoenix - AwardBIOS CMOS Setup Utility
PCI Express Root Function

PCI Express Port 1	Auto	ITEM HELP
PCI Express Port 2	Auto	

Phoenix - AwardBIOS CMOS Setup Utility
USB Device Setting

USB 1.0 Controller	Enabled	ITEM HELP
USB 2.0 Controller	Enabled	Menu Level >
USB Operation Mode	High Speed	
USB Keyboard Function	Enabled	
USB Storage Function	Enabled	
*** USB Mass Storage Device Boot Setting ***		

IDE HDD Block Mode
This field allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive.

On-chip Primary PCI IDE
The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select *Enabled* to activate each channel separately.

IDE Primary Master/Slave PIO
These fields allow your system hard disk controller to work faster. Rather than have the BIOS issue a series of commands that transfer to or from the disk drive, PIO (Programmed Input/Output) allows the BIOS to communicate with the controller and CPU directly.

The system supports five modes, numbered from 0 (default) to 4, which primarily differ in timing. When Auto is selected, the BIOS will select the best available mode.

IDE Primary Master/Slave UDMA
These fields allow your system to improve disk I/O throughput to 33Mb/sec with the Ultra DMA/33 feature. The options are *Auto* and *Disabled*.

Intel HD Audio Controller Select
This field, by default, is set to *Auto*.

USB Client Controller
This field, by default, is set to *Disabled*.

SDIO/MMC Controller
This field, by default, is set to *Enabled*.

Onboard Serial/Parallel Port
These fields allow you to select the onboard serial and parallel ports and their addresses. The default values for these ports are:

Serial Port 1	3F8/IRQ4
Serial Port 2	2F8/IRQ3
Serial Port 3	3E8/IRQ10
Serial Port 4	2E8/IRQ5
Parallel Port	378H/IRQ7

Parallel Port Mode
This field allows you to determine parallel port mode function.

SPP	Standard Printer Port
EPP	Enhanced Parallel Port
ECP	Extended Capabilities Port
ECP+EPP	Combination of ECP and EPP capabilities
Normal	Normal function

USB 1.0 Controller
The options for this field are *Enabled* and *Disabled*. By default, this field is set to ***Enabled***.

USB 2.0 Controller
The options for this field are *Enabled* and *Disabled*. By default, this field is set to ***Enabled***. In order to use USB 2.0, necessary OS drivers must be installed first.

USB Operation Mode
By default, this field is set to ***High Speed***.

USB Keyboard/Storage Function
The options for this field are *Enabled* and *Disabled*. By default, this field is set to ***Enabled.***

Onboard Lan Boot ROM
By default, this setting is *Disabled*.

Power Management Setup

Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup

ACPI Suspend Type	S3(STR)	ITEM HELP
Power Management	User Define	Menu Level >
Video Off Method	V/H SYNC+Blank	
Video Off In Suspend	Yes	
Suspend Type	Stop Grant	
HDD Power Down	Disabled	
Soft-Off by PWR-BTTN	Instant-Off	
Wake-Up by PCI Card	Disabled	
HPET Feature	Press Enter	

ACPI Suspend Type
The default setting of the ACPI Suspend mode is ***S3(STR)***.

Power Management
This field allows you to select the type of power saving management modes. There are four selections for Power Management.

Min. Power Saving	Minimum power management
Max. Power Saving	Maximum power management.
User Define	Each of the ranges is from 1 min. to 1hr. Except for HDD Power Down which ranges from 1 min. to 15 min.

Video Off Method
This field defines the Video Off features. There are three options.

V/H SYNC + Blank	Default setting, blank the screen and turn off vertical and horizontal scanning.
DPMS	Allows BIOS to control the video display.
Blank Screen	Writes blanks to the video buffer.

Video Off In Suspend
When enabled, the video is off in suspend mode. The default setting is ***Yes***.

Suspend Type
The default setting for the Suspend Type field is ***Stop Grant***.

HDD Power Down
When enabled, and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

Soft-Off by PWRBTN

This field defines the power-off mode when using an ATX power supply. The *Instant Off* mode allows powering off immediately upon pressing the power button. In the *Delay 4 Sec* mode, the system powers off when the power button is pressed for more than four seconds or enters the suspend mode when pressed for less than 4 seconds.

Wake-Up by PCI card

By default, this field is ***Disabled.***

HPET Feature

HPET means “High Precision Event Timer”. The HPET can produce periodic interrupts at a much higher resolution than the RTC and is often used to synchronize multimedia streams.

PNP/PCI Configurations

This option configures the PCI bus system. All PCI bus systems on the system use INT#, thus all installed PCI cards must be set to this value.

Phoenix - AwardBIOS CMOS Setup Utility
PnP/PCI Configurations

		ITEM HELP
Init Display First	Onboard	
Reset Configuration Data	Disabled	Menu Level
Resources Controlled By	Auto (ESCD)	
IRQ Resources	Press Enter	Select Yes if you are using a Plug and Play capable operating system Select No if you need the BIOS to configure non-boot devices
PCI/VGA Palette Snoop	Disabled	
PCI Latency Timer(CLK)	32	
PCI Express relative items		
Maximum Payload Size	128	

Init Display First

The default setting is ***Onboard***.

Reset Configuration Data

This field allows you to determine whether to reset the configuration data or not. The default value is ***Disabled.***

Resources Controlled by

This PnP BIOS can configure all of the boot and compatible devices with the use of a PnP operating system such as Windows 95.

PCI/VGA Palette Snoop

Some non-standard VGA display cards may not show colors properly. This field allows you to set whether or not MPEG ISA/VESA VGA cards can work with PCI/VGA. When this field is enabled, a PCI/VGA can work with an MPEG ISA/VESA VGA card. When this field is disabled, a PCI/VGA cannot work with an MPEG ISA/VESA card.

Maximum Payload Size

The default setting of the PCI Express Maximum Payload Size is 128.

PC Health Status

This section shows the parameters in determining the PC Health Status. These parameters include temperatures, fan speeds and voltages.

Phoenix - AwardBIOS CMOS Setup Utility
PC Health Status

CPU Warning Temperature	Disabled	ITEM HELP
Current System Temp.	45℃/113℉	Menu Level >
Current CPU Temp.	45℃/113℉	
Vcore	0.84 V	
+12 V	12.24 V	
+1.8V	1.88V	
+5V	5.22V	
-12V	-12.39V	
+3.3V	3.31V	
VBAT (V)	3.23 V	
3VSB(V)	3.29 V	

CPU Warning Temperature

This field allows the user to set the temperature so that when the temperature is reached, the system sounds a warning. This function can help prevent damage to the system that is caused by overheating.

Temperatures/Voltages

These fields are the parameters of the hardware monitoring function feature of the board. The values are read-only values as monitored by the system and show the PC health status.

Load Fail-Safe Defaults

This option allows you to load the troubleshooting default values permanently stored in the BIOS ROM. These default settings are non-optimal and disable all high-performance features.

Load Optimized Defaults

This option allows you to load the default values to your system configuration. These default settings are optimal and enable all high performance features.

Set Supervisor/User Password

These two options set the system password. Supervisor Password sets a password that will be used to protect the system and Setup utility. User Password sets a password that will be used exclusively on the system. To specify a password, highlight the type you want and press <Enter>. The Enter Password: message prompts on the screen. Type the password, up to eight characters in length, and press <Enter>. The system confirms your password by asking you to type it again. After setting a password, the screen automatically returns to the main screen.

To disable a password, just press the <Enter> key when you are prompted to enter the password. A message will confirm the password to be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

Save & Exit Setup

This option allows you to determine whether or not to accept the modifications. If you type “Y”, you will quit the setup utility and save all changes into the CMOS memory. If you type “N”, you will return to Setup utility.

Exit Without Saving

Select this option to exit the Setup utility without saving the changes you have made in this session. Typing “Y” will quit the Setup utility without saving the modifications. Typing “N” will return you to Setup utility.

Drivers Installation

This section describes the installation procedures for software and drivers under the Windows XP and Windows Vista. The software and drivers are included with the board. If you find the items missing, please contact the vendor where you made the purchase. The contents of this section include the following:

Intel Chipset Device Software 38
VGA Drivers Installation..... 39
Audio Drivers Installation 41
LAN Drivers Installation 42

IMPORTANT NOTE:
After installing your Windows operating system, you must install first the Intel Chipset Software Installation Utility before proceeding with the drivers installation.

Intel Chipset Device Software

1. Insert the CD that comes with the board. Click ***Intel (R)Chipset Software Installation Utility.***

Inside This CD...
Version : ML-1.1 @2
Intel
SATA
LAN
Tools
Intel(R) Chipset Software Installation Utility
Intel(R) SCH Chipset Family Graphics Driver
Realtek High Definition Codec Audio Driver
Update Windows OS with Plug and Play feature and allow the OS to correctly identify the Intel chipset components and properly configure the system.

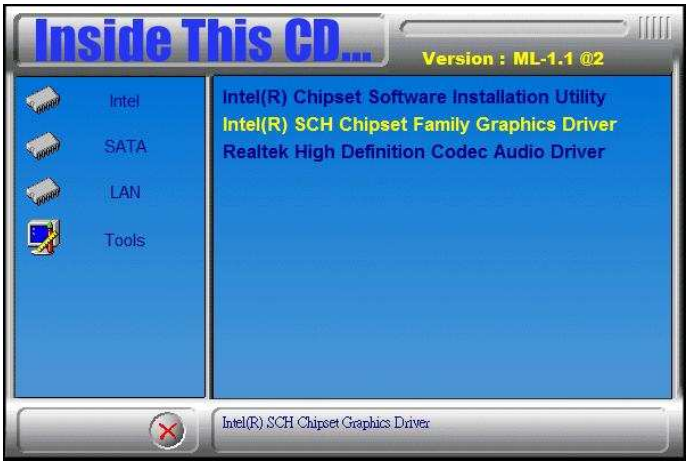
2. When the welcome screen to the setup program for Intel® Chipset Device Software appears, click **Next** to continue.

3. In the next screen, click **Next** to agree with the terms of the license agreement. Then, click **Next** again in the next screen after reading the Readme File Information to continue. After Setup has finished installing the software, click **Finish** to complete the setup process.

Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Is Complete
intel
The setup program successfully installed the Intel® Chipset Device Software onto this computer. Click Finish to complete the setup process.
Finish
Intel® Installation Framework

VGA Drivers Installation

1. Insert the CD that comes with the board. Click ***Intel (R)SCH Chipset Family Graphics Driver***.

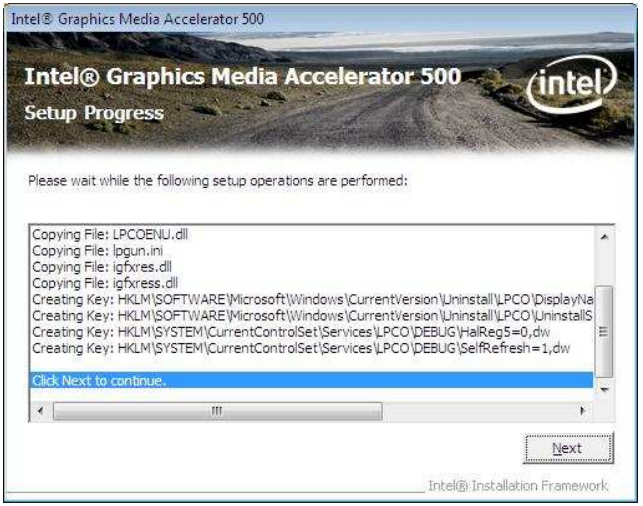


2. When the welcome screen to the setup program for Intel® Graphics Media Accelerator 500 appears, click **Next** to continue.

3. In the next screen, click **Next** to agree with the terms of the license agreement. Then, click **Next** again in the nex screen after reading the Readme File Information to continue.

4. Click **Install this driver software anyway** to continue.

5. Click **Next** to continue with the setup operations.



6. When setup is completed, click **Finish** to restart the computer and for changes to take effect.

Note: After the installation of the Windows XP VGA drivers, when you are using a DVI monitor, and after restarting, the display will jump to MID(LVDS). At this moment, use the hot key (Ctrl+Alt+F4) in order to use the DVI monitor.

Audio Drivers Installation

1. Insert the CD that comes with the board. Click ***Realtek High Definition Codec Audio Driver***.

2. The Welcome screen to the InstallShieled Wizard for Realtek High Definition Audio Driver will appear. At this point, click **Next** to continue the installation process.

3. When installation is completed, restart the computer as prompted. Click **Finish**.

LAN Drivers Installation

1. Insert the CD that comes with the board. Click ***LAN Card*** at the left side and then ***Realtek GbE_FE Ethernet PCI-E NIC Driver***.

2. In the welcome screen of the InstallShield Wizard for REALTEK GbE & FE Ethernet PCI-E NIC Driver, click ***Next***.

3. In the InstallShield Wizard screen, click ***Install*** to begin the installation.

4. InstallShield Wizard completed. Click ***Finish*** to exit the Wizard.

Appendix

A. I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses, which also becomes the identity of the device. The following table lists the I/O port addresses used.

Address	Device Description
000h - 01Fh	DMA Controller #1
020h - 03Fh	Interrupt Controller #1
040h - 05Fh	Timer
060h - 06Fh	Keyboard Controller
070h - 07Fh	Real Time Clock, NMI
080h - 09Fh	DMA Page Register
0A0h - 0BFh	Interrupt Controller #2
0C0h - 0DFh	DMA Controller #2
0F0h	Clear Math Coprocessor Busy Signal
0F1h	Reset Math Coprocessor
1F0h - 1F7h	IDE Interface
2E8h - 2EFh	Serial Port #4(COM4)
2F8h - 2FFh	Serial Port #2(COM2)
2B0h - 2DFh	Graphics adapter Controller
378h - 3FFh	Parallel Port #1(LPT1)
3B0h - 3BFh	Monochrome & Printer adapter
3C0h - 3CFh	EGA adapter
3D0h - 3DFh	CGA adapter
3E8h - 3EFh	Serial Port #3(COM3)
3F8h - 3FFh	Serial Port #1(COM1)

B. Interrupt Request Lines (IRQ)

Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

Level	Function
IRQ0	System Timer Output
IRQ1	Keyboard
IRQ2	Interrupt Cascade
IRQ3	Serial Port #2
IRQ4	Serial Port #1
IRQ5	Serial Port #4
IRQ6	Reserved
IRQ7	Parallel Port #1
IRQ8	Real Time Clock
IRQ9	Reserved
IRQ10	Serial Port #3
IRQ11	Reserved
IRQ12	PS/2 Mouse
IRQ13	80287
IRQ14	Primary IDE
IRQ15	Reserved

C. Watchdog Timer Configuration

The WDT is used to generate a variety of output signals after a user programmable count. The WDT is suitable for use in the prevention of system lock-up, such as when software becomes trapped in a deadlock. Under these sorts of circumstances, the timer will count to zero and the selected outputs will be driven. Under normal circumstance, the user will restart the WDT at regular intervals before the timer counts to zero.

SAMPLE CODE:

```
//=============================================================================
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//=============================================================================
#include <stdio.h>
#include <stdlib.h>
#include "W627EHF.H"
//=============================================================================
int main (int argc, char *argv[]);
void copyright(void);
void EnableWDT(int);
void DisableWDT(void);
//=============================================================================
int main (int argc, char *argv[])
{
	unsigned char bBuf;
	unsigned char bTime;
	char **endptr;

	copyright();

	if (argc != 2)
	{
		printf(" Parameter incorrect!!\n");
		return 1;
	}

	if (Init_W627EHF() == 0)
	{
		printf(" Winbond 83627HF is not detected, program abort.\n");
		return 1;
	}
	bTime = strtol (argv[1], endptr, 10);
	printf("System will reset after %d seconds\n", bTime);

	EnableWDT(bTime);

	return 0;
}
//=============================================================================
```

```
void copyright(void)
{
        printf("\n======== Winbond 83627EHF Watch Timer Tester (AUTO DETECT) ========\n"\
                        "       Usage : W627E_WD reset_time\n"\
                        "       Ex : W627E_WD 3  => reset system after 3 second\n"\
                        "            W627E_WD 0  => disable watch dog timer\n");
}
//===========================================================================
void EnableWDT(int interval)
{
        unsigned char bBuf;

        bBuf = Get_W627EHF_Reg( 0x2D);
        bBuf &= (!0x01);
        Set_W627EHF_Reg( 0x2D, bBuf);                   //Enable WDTO

        Set_W627EHF_LD( 0x08);                          //switch to logic device 8
        Set_W627EHF_Reg( 0x30, 0x01);                   //enable timer

        bBuf = Get_W627EHF_Reg( 0xF5);
        bBuf &= (!0x08);
        Set_W627EHF_Reg( 0xF5, bBuf);                   //count mode is second

        Set_W627EHF_Reg( 0xF6, interval);               //set timer
}
//===========================================================================
void DisableWDT(void)
{
        Set_W627EHF_LD(0x08);                           //switch to logic device 8
        Set_W627EHF_Reg(0xF6, 0x00);                    //clear watchdog timer
        Set_W627EHF_Reg(0x30, 0x00);                    //watchdog disabled
}
//===========================================================================
```

```
//===========================================================================
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//===========================================================================
#include "W627EHF.H"
#include <dos.h>
//===========================================================================
unsigned int W627EHF_BASE;
void Unlock_W627EHF (void);
void Lock_W627EHF (void);
//===========================================================================
unsigned int Init_W627EHF(void)
{
	unsigned int result;
	unsigned char ucDid;

	W627EHF_BASE = 0x2E;
	result = W627EHF_BASE;

	ucDid = Get_W627EHF_Reg(0x20);
	if (ucDid == 0x88)
	{	goto Init_Finish;	}

	W627EHF_BASE = 0x4E;
	result = W627EHF_BASE;
	ucDid = Get_W627EHF_Reg(0x20);
	if (ucDid == 0x88)
	{	goto Init_Finish;	}

	W627EHF_BASE = 0x00;
	result = W627EHF_BASE;

Init_Finish:
	return (result);
}
//===========================================================================
void Unlock_W627EHF (void)
{
	outportb(W627EHF_INDEX_PORT, W627EHF_UNLOCK);
	outportb(W627EHF_INDEX_PORT, W627EHF_UNLOCK);
}
//===========================================================================
void Lock_W627EHF (void)
{
	outportb(W627EHF_INDEX_PORT, W627EHF_LOCK);
}
//===========================================================================
void Set_W627EHF_LD( unsigned char LD)
{
	Unlock_W627EHF();
	outportb(W627EHF_INDEX_PORT, W627EHF_REG_LD);
	outportb(W627EHF_DATA_PORT, LD);
	Lock_W627EHF();
}
```

```
//============================================================================
void Set_W627EHF_Reg( unsigned char REG, unsigned char DATA)
{
        Unlock_W627EHF();
        outportb(W627EHF_INDEX_PORT, REG);
        outportb(W627EHF_DATA_PORT, DATA);
        Lock_W627EHF();
}
//============================================================================
unsigned char Get_W627EHF_Reg(unsigned char REG)
{
        unsigned char Result;
        Unlock_W627EHF();
        outportb(W627EHF_INDEX_PORT, REG);
        Result = inportb(W627EHF_DATA_PORT);
        Lock_W627EHF();
        return Result;
}
//============================================================================
```

```
//============================================================================
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//============================================================================
#ifndef __W627EHF_H
#define __W627EHF_H                     1
//============================================================================
#defineW627EHF_INDEX_PORT       (W627EHF_BASE)
#defineW627EHF_DATA_PORT        (W627EHF_BASE+1)
//============================================================================
#defineW627EHF_REG_LD           0x07
//============================================================================
#define W627EHF_UNLOCK                  0x87
#defineW627EHF_LOCK             0xAA
//============================================================================
unsigned int Init_W627EHF(void);
void Set_W627EHF_LD( unsigned char);
void Set_W627EHF_Reg( unsigned char, unsigned char);
unsigned char Get_W627EHF_Reg( unsigned char);
//============================================================================
#endif  //__W627EHF_H
```